TRANSPORTATION CONCEPT REPORT
INTERSTATE 5
11-SD-5 P.M. R0.0 - R72.4
May 1997

State of California
Department of Transportation
District 11 - System Planning Branch
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Transportation Concept Summary
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This Transportation Concept Report (TCR) is a planning document which describes the Department's basic approach to the development of a given corridor. Considering reasonable financial constraints and projected travel demand, this TCR establishes a 20 year transportation planning concept for Interstate 5 and identifies modal transportation options needed to achieve the concept. The concept considers operating levels of service (LOS), modal improvements, and new technologies. The TCR also considers potential long term needs for the corridor beyond the 20 year planning period. The long term needs focus on the Post-2020 Ultimate Transportation Corridor (UTC).

The TCR is a preliminary planning phase that leads to subsequent programming and the project development process. As such, the specific proposed nature of improvements (i.e., number of lanes, access control, etc.) may change in later project development stages, with final determinations made during the project study report (PSR), project report (PR), and design phases.

Each TCR must be viewed as an integral part of a planned system. The TCR is based on the completion of the 20 year system. The system has been developed to meet anticipated travel demand generated from regional growth forecasts. Removal of any portion of a route from the system will adversely affect travel on parallel or intersecting routes.

The TCR is prepared by Caltrans District staff in cooperation with local and regional agencies. They will be updated as necessary as conditions change or new information is obtained.

The focus of the TCR is the 2020 Transportation Concept, which includes State highway, transit service, system management and travel reduction, goods movement, International border, aviation and nonmotorized components.

ROUTE DESCRIPTION

The southern terminus of Interstate 5 (I-5) is in San Diego County at the International Border with Mexico, P.M. S.D. R0.0. In San Diego County, I-5 extends 116.5 kilometers (km) (72.4 miles) north to the Orange County line/District 11 Boundary (P.M. SD R72.4). The route continues north through California, Oregon, and Washington, with its northern terminus at the International Border with Canada.

The San Diego County portion of I-5 was added to the State Highway System in 1909, and was included in the California Freeway and Expressway (F&E) System in 1959.

PURPOSE OF ROUTE

I-5 is the principal north-south route in the densely populated coastal portion of San Diego County. I-5 serves interregional travel by linking the San Diego metropolitan area with Mexico to the south and Orange County and the Los Angeles metropolitan area to the north. I-5 is a heavily utilized commuter route providing direct access to the San Diego Central Business District (CBD) as well as numerous other employment centers located within the corridor. I-5 also provides truck access to San Diego's marine terminals, rail yards, and air freight terminals for the purpose of goods movement. Since I-5 parallels the coast, it provides access to a multitude of coastal recreational opportunities as well as being a recreational gateway into Mexico. The existing facility and operating conditions for I-5 in San Diego County are shown in Table S-1.

TABLE S-1
EXISTING FACILITY AND OPERATING CONDITIONS

Segment/ County/ Post Mile	Location	# of Lanes/ Facility Type	ADT	Peak Hour D/CRatio	PeakHour Operating LOS
1 SD R0.0 - R0.9	International Border to I-805	8F	72 400	0.41	A
2 SD R0.9 - 3.1	I-805 to SR-905	8F	58 500	0.33	A
3 SD 3.1 - 4.7	SR-905 to Palm Avenue	8F	91 200	0.52	B
4 SD 4.7 - 6.8	Palm Avenue to L Street	8F	141 100	0.83	D
5 SD 6.8 - 9.4	L Street to SR-54	8F	152 800	0.82	D
6 SD 9.4 - R12.6	SR-54 to I-15	8F	171 300	1.08	F0
7 SD R12.6 - R14.1	I-15 to Coronado Bridge	8F	152 700	1.05	F0
8 SD R14.1 - R15.0	Coronado Bridge to SR-94	8F	176 100	0.99	E
9 SD 15.0 - R16.1	SR-94 to SR-163	10F	198 600	1.00	E
10 SD R16.1 - R17.5	SR-163 to Pacific Highway ramp	8F	184 300	1.01	F0
11 SD 17.5 - R20.1	Pacific Highway ramp to I-8	8F	187 100	1.04	F0
12 SD R20.1 - R23.5	I-8 to SR-274	8F	197 200	1.00	E
13 SD R23.5 - R26.0	SR-274 to SR-52	8F	174 200	0.93	E
14 SD R26.0 - R30.7	SR-52 to I-805	8F	143 900	0.83	D
15 SD R30.7 R32.9	I-805 to SR-56	8F	221 500	1.12	F0
16 SD R32.9 - R38.6	SR-56 to Manchester Avenue	8F	201 500	1.06	F0
17 SD R38.6 - R42.7	Manchester Avenue to Leucadia Boulevard	8F	173 000	0.91	D
18 SD R42.7 - R47.0	Leucadia Boulevard to Palomar Airport Road	8F	161 800	0.89	D
19 SD R47.0 - R51.2	Palomar Airport Road to SR-78	8F	166 500	0.92	D
20 SD R51.2 - R53.2	SR-78 to Mission Avenue	8F	149 200	0.81	D
21 SD R53.2 - R53.9	Mission Avenue to SR-76	8F	124 700	0.64	C
22 SD R53.9 - R56.4	SR-76 to U/R limit	8F	111 800	0.60	B
23 SD R56.4 - R72.4	U/R limit to Orange County line	8F	114 800	0.59	B

ADT = Average Daily Traffic
D/C = Demand to Capacity
8F = Eight lane freeway
10F = Ten lane Freeway

Table S-2 shows highway improvements to I-5 that are part of the 2020 Transportation Concept. Segments without proposed highway improvements are not included. The peak hour D/C ratio and peak hour Operating LOS listed assume completion of the proposed highway improvements. These improvements are also shown on the Transportation Concept Map at the end of this report.

TABLE S-2
2020 TRANSPORTATION CONCEPT FACILITY IMPROVEMENTS

Segment/ County/ Post Mile	Location	Improvement Description *	Peak Hour D/C Ratio	Peak Hour Operating LOS **	Concept LOS***
1 SD R0.0 - R0.9	International Border to I-805	8F + transborder access improvements	0.99	E	E
6 SD 9.4 - 12.6	SR-54 to I-15	Upgrade from 8F to 10F	1.30	F1	F0
12 SD R20.1 - R23.5	I-8 to SR-274	Add HOV/TA	1.24	F0	E
13 SD R23.5 - R26.0	SR-274 to SR-52	Add HOV/TA	1.26	F1	E
14 SD R26.0 - R30.7	SR-52 to I-805	Add HOV/TA	1.32	F1	E
15 SD R30.7 R32.9	I-805 to SR-56	Add 6 O.S. +HOV/TA	1.24	F0	F0
16 SD R32.9 - R38.6	SR-56 to Manchester Avenue	Upgrade from 8F to 10F + HOV	1.41	F2	F0
17 SD R38.6 - R42.7	Manchester Avenue to Leucadia Boulevard	Upgrade from 8F to 10F + HOV	1.16	F0	E
18 SD R42.7 - R47.0	Leucadia Boulevard to Palomar Airport Road	Upgrade from 8F to 10F + HOV	1.12	F0	E
19 SD R47.0 - R51.2	Palomar Airport Road to SR-78	Upgrade from 8F to 10F + HOV	1.08	F0	E
20 SD R51.2 - R53.2	SR-78 to Mission Avenue	Add HOV	1.46	F3	E
21 SD R53.2 - R53.9	Mission Avenue to SR-76	Add HOV	1.28	F1	E
22 SD R53.9 - R56.4	SR-76 to U/R limit	Add HOV	1.27	F1	E
23 SD R56.4 - R72.4	U/R limit to Orange County line	Add HOV + BC +FC	1.26	F1	E

ADT = Average Daily Traffic
BC = Border Checkpoint expansion
D/C = Demand to Capacity
FC = Foothill Corridor connection
IC = Interchange
O.S. = Outer Separation
TA = Transit Alternative
WB = Widen Bridge
8F = Eight lane freeway
10F = Ten lane freeway
2 HOV = Two High Occupancy Vehicle lanes

* The Concept LOS for the HOV lanes is LOS 'C' and the 2020 peak hour Operating LOS for the HOV lanes is expected to be LOS 'C' or better.
* * Peak Hour Operating Level Of Service includes provision of state highway, transit and arterial improvements.
*** Concept LOS is based on the SANDAG CMP minimum LOS standard.
NOTES:

1) Specific facility improvements for Segments 14 through 23 are subject to change pending results of the North Coast Corridor Major Investment Study.
2) Corridor facility improvements from Downtown San Diego to Oceanside include continuing Coast Express Commuter Rail (Coaster) service.
3) Consideration should be given to upgrading Segments 20-23 to a 10 + 2HOV where feasible.

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INTRODUCTION AND STATEMENT OF PLANNING INTENT

The system planning process consists of three products: the District System Management Plan (DSMP), the Transportation System Development Plan (TSDP), and the Transportation Concept Report (TCR).

The DSMP describes how the District intends to maintain, manage, and improve the District transportation system over the next 20 years. The DSMP is developed in partnership with regional and local transportation planning agencies. The DSMP summarizes 20 year planning concepts and proposed transportation improvements on a system wide level, and influences the development of future transportation concepts and development plans. It integrates land use, modal opportunities, regional arterial plans, transportation system management, transportation demand management, highway system improvements, and the District highway network into a comprehensive transportation program. The DSMP serves as the foundation for the TSDP and the TCRs.

The Transportation Development Plan (TSDP) is an internal Caltrans system planning document. It's purpose is to identify by district a reasonable and effective list of multimodal transportation improvements (infrastructure/capital outlay), strategies, and demand and system management options to improve statewide, interregional and regional mobility and Intermodal transfer of people and goods. It includes both a Recommended Plan and a Cost Constrained Plan component, and categorizes improvements into two time frames, 2001-2015 and post-2015. It is based on analysis of current and projected future travel demand. The TSDP replaces the District 11 Route Development Plan.

The TSDP is an internal "sketch" planning document that broadens the department's assessment of mobility options at an early preliminary planning stage. It expands system planning from a basic analysis of state highway route deficiencies to a larger integrated intermodal and multimodal analysis of travel corridors. The TSDP joins the principles, practices, and concepts of the Advanced Transportation System Development (ATSD) program to system planning.

Improvements, strategies, and system management options identified in the TSDP will be Caltrans "candidates" for further detailed examination in state, metropolitan, regional or local studies and processes. The TSDP is also the department's initial identification of areas under consideration for major investment studies (MIS) with metropolitan agencies and rail/transit operators.

The TCR process was discussed in the Executive Summary.

ROUTE DESCRIPTION

The southern terminus of Interstate 5 (I-5) is in San Diego County at the International Border with Mexico, P.M. S.D. R0.0. In San Diego County, I-5 extends 116.5 kilometers (km) (72.4 miles) north to the Orange County line/District 11 Boundary (P.M. SD R72.4). The route continues north through California, Oregon, and Washington, with its northern terminus at the International Border with Canada.

The San Diego County portion of I-5 was added to the State Highway System in 1909, and was included in the California Freeway and Expressway (F&E) System in 1959.

Purpose of Route

I-5 is the principal north-south route in the densely populated coastal portion of San Diego County. I-5 serves interregional travel by linking the San Diego metropolitan area with Mexico to the south and Orange County and the Los Angeles metropolitan area to the north. I-5 serves intraregional travel needs by linking together the coastal Cities of Tijuana Mexico, Imperial Beach, Chula Vista, National City, San Diego, Del Mar, Solana Beach, Encinitas, Carlsbad and Oceanside. I-5 is a heavily utilized commuter route providing direct access to the San Diego Central Business District (CBD) as well as numerous other employment centers located within the corridor. I-5 also provides truck access to San Diego's marine terminals, rail yards, and air freight terminals for the purpose of goods movement. Since I-5 parallels the coast, it provides access to a multitude of coastal recreational opportunities as well as being a recreational gateway into Mexico. It intersects all the major east-west metropolitan routes, including State Route 905 (SR-905), State Route 75 (SR-75), State Route 54 (SR-54), State Route 94 (SR-94), Interstate 8 (I-8), State Route 209 (SR-209), State Route 274 (SR-274), State Route 52 (SR-52), State Route 56 (SR-56), State Route 78 (SR-78), and State Route 76 (SR-76). State routes parallel to I-5 include Interstate 805 (I-805), State Route 163 (SR-163) and Interstate 15 (I-15).

Existing Facility Classifications

The functional classification of I-5 in San Diego County is Interstate.

The National Highway System (NHS) Designation Act of 1995 was enacted by Congress in November, 1995. The purpose of the NHS is to provide an integrated national highway system that serves both urban and rural America; to connect major population centers, international border crossings, ports, airports, public transportation facilities, and other major travel destinations; to meet national defense requirements; and to serve interstate and interregional travel. The new NHS includes the Interstate System routes. In Caltrans District 11, the NHS totals 789.0 km (490.3 miles). All of the San Diego portion of I-5 is included in the NHS.

The entire San Diego County portion of I-5 is designated as part of the national network for Surface Transportation Assistance Act (STAA) trucks.

To emphasize corridors that are most essential to the California economy in terms of

national and international trade, a transportation network known as the Intermodal Corridors of Economic Significance (ICES) has been developed. To be included in the ICES system, a route should provide access between major freight intermodal facilities and serve freight traffic with the NAFTA countries of Canada and Mexico, as well as the Pacific Rim and other U.S. trade markets. The route should carry high interstate and international freight volumes and value important to the economy of California. All of the San Diego portion of I-5 is included in the ICES system.

From the urban/rural limit (P.M. SD R56.4) to the Orange County line (P.M. SD R72.4) I-5 is included as a part of the Interregional Road System (IRRS). The portion of I-5 from the International Border (P.M. SD R0.0) to Palm Avenue (P.M. SD 4.7) and the portion from SR-94 (P.M. SD R15.0) to the Orange County line (P.M. SD R72.4) is on the California State Scenic Highway System and is eligible to be designated as an official State Scenic Highway.

The portion of I-5 from the International Border with Mexico (P.M. SD R0.0) to SR-15 (P.M. SD R12.6) is included in the Statewide List of Lifeline Routes. A lifeline route is a route that is deemed so critical to emergency response/life saving activities of a region or the state that it must remain open immediately following a major earthquake, or for which preplanning for detour and/or expeditious repair and reopening can guarantee through movement of emergency response activities.

For maintenance programming purposes, the State Highway System has been classified as Class 1, 2, and 3 highways based on the Maintenance Service Level (MSL) descriptive definitions. The MSL 1 designation contains route segments in urban areas functionally classified as Interstate, Other Principal Arterial - Freeway or Expressway, or Other Principal Arterial. MSL 2 contains route segments classified as an Other Principal Arterial - Freeway or Expressway or Other Principal Arterial not in MSL 1, and route segments functionally classified as minor arterials not in MSL 3. MSL 3 indicates a route or route segment with the lowest maintenance priority. Typically, MSL 3 contains route segments functionally classified as major or minor collectors and local roads, route segments with relatively low traffic volumes, and route segments being considered for relinquishment, rescission, or where a new alignment will replace the existing facility. Route segments where the District does not anticipate spending money and route segments where route continuity is necessary are also assigned an MSL 3 designation. I-5 is classified as a MSL 1 throughout the entire length of the route.

Route Segments

I-5 is examined in 23 segments for traffic analysis purposes. Table 1 lists segments, post-miles, locations, number of lanes and facility type and whether the segment is in an urban or rural area.

TABLE 1
ROUTE SEGMENTATION

Segment/ County/ Post Mile	Location	# of Lanes/ Facility Type	Urban/Rural
1 SD R0.0 - R0.9	International Border to I-805	8F	U
2 SD R0.9 - 3.1	I-805 to SR-905	8F	U
3 SD 3.1 - 4.7	SR-905 to Palm Avenue	8F	U
4 SD 4.7 - 6.8	Palm Avenue to L Street	8F	U
5 SD 6.8 - 9.4	L Street to SR-54	8F	U
6 SD 9.4 - R12.6	SR-54 to I-15	8F	U
7 SD R12.6 - R14.1	I-15 to Coronado Bridge	8F	U
8 SD R14.1 - R15.0	Coronado Bridge to SR-94	8F	U
9 SD 15.0 - R16.1	SR-94 to SR-163	10F	U
10 SD R16.1 - R17.5	SR-163 to Pacific Highway ramp	8F	U
11 SD 17.5 - R20.1	Pacific Highway ramp to I-8	8F	U
12 SD R20.1 - R23.5	I-8 to SR-274	8F	U
13 SD R23.5 - R26.0	SR-274 to SR-52	8F	U
14 SD R26.0 - R30.7	SR-52 to I-805	8F	U
15 SD R30.7 R32.9	I-805 to SR-56	8F	U
16 SD R32.9 - R38.6	SR-56 to Manchester Avenue	8F	U
17 SD R38.6 - R42.7	Manchester Avenue to Leucadia Boulevard	8F	U
18 SD R42.7 - R47.0	Leucadia Boulevard to Palomar Airport Road	8F	U
19 SD R47.0 - R51.2	Palomar Airport Road to SR-78	8F	U
20 SD R51.2 - R53.2	SR-78 to Mission Avenue	8F	U
21 SD R53.2 - R53.9	Mission Avenue to SR-76	8F	U
22 SD R53.9 - R56.4	SR-76 to U/R limit	8F	U
23 SD R56.4 - R72.4	U/R limit to Orange County line	8F	R

8F = Eight lane freeway
10F = Ten lane Freeway

Existing Facility

Most of I-5 is an eight lane freeway with auxiliary lanes at various locations throughout the San Diego metropolitan region. I-5 has 3.7 meter (12 foot) lane widths, 2.4 to 4.0 meter (8 to13 foot) outside shoulders, 1.5 to 4.3 meter (5 to 14 foot) inside shoulders, a 45.7 to 152.4 meter (150 to 500) foot maximum right of way width, and a flat gradeline, with the exception of one rolling section from SR-52 (P.M. SD R26.0) to I-805 (P.M. SD R30.7).

A physical description of the existing facility geometrics in a segment-specific format is shown in Table 2.

TABLE 2
EXISTING FACILITY GEOMETRICS

Segment/ County Post Mile	No. Lanes/ Facility Width	Outside Shoulder Width	Inside Shoulder Width	Maximum R/W Width	Median Width	Grade Line
1 SD R0.0 - R0.9	8F @ 3.7 (12)	4.0 (13)	0	134.1 (440)	9.1 (30)	F
2 SD R0.9 - 3.1	8F @ 3.7 (12)	3.0 -4.0 (10 - 13)	2.4 -4.3 (8 -14)	64.3 (211)	9.1 (30)	F
3 SD 3.1 - 4.7	8F @ 3.7 (12)	3.0 -4.0 (10 - 13)	2.4 -4.3 (8 -14)	61.0 -67.0 (200 - 220)	9.1 (30)	F
4 SD 4.7 - 6.8	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	73.2 (240)	9.1 (30)	F
5 SD 6.8 - 9.4	8F @ 3.7 (12)	3.0 (10)	1.5 -3.0 (5 - 10)	97.5 (320)	6.7 -24.4 (22 - 80)	F
6 SD 9.4 - R12.6	8F @ 3.7 (12)	3.0 (10)	1.5 -3.0 (5 - 10)	91.4 - 103.6 (300 - 340)	6.7 - 15.2 (22 - 50)	F
7 SD R12.6 - R14.1	8F @ 3.7 (12)	3.0 -3.7 (10 - 12)	2.4 (8)	73.2 -97.5 (240 - 320)	6.7 (22)	F
8 SD R14.1 - R15.0	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	73.2 (240)	6.7 (22)	F
9 SD 15.0 - R16.1	10F @ 3.7 (12)	3.0 (10)	2.4 (8)	91.4 - 152.4 (300 - 500)	6.7 (22)	F
10 SD R16.1 - R17.5	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	59.7 - 112.8 (196 - 370)	6.7 (22)	F
11 SD 17.5 - R20.1	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	67.0 (220)	6.7 - 11.0 (22 - 36)	F
12 SD R20.1 - R23.5	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	61.0 - 97.5 (200 - 320)	11.0 (36)	F
13 SD R23.5 - R26.0	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	91.4 (300)	11.0 (36)	F
14 SD R26.0 - R30.7	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	79.2 - 106.7(260 - 350)	11.0 (36)	R
15 SD R30.7 R32.9	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	91.4 (300)	11.0 (36)	F
16 SD R32.9 - R38.6	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	91.4 - 152.4 (300 - 500)	11.0 (36)	F
17 SD R38.6 - R42.7	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	91.4 (300)	11.0 (36)	F
18 SD R42.7 - R47.0	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	85.3 (280)	11.0 (36)	F
19 SD R47.0 - R51.2	8F @ 3.7 (12)	2.4 -3.0 (8 - 10)	2.4 -3.0 (8 - 10)	73.2 - 115.8 (240 - 380)	11.0 - 12.2 (36 - 40)	F
20 SD R51.2 - R53.2	8F @ 3.7 (12)	3.0 (10)	2.4 -3.0 (8 - 10)	85.3 - 106.7 (280 - 350)	12.2 (40)	F
21 SD R53.2 - R53.9	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	85.3 (280)	12.2 - 30.2 (40 - 99)	F
22 SD R53.9 - R56.4	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	85.3 (280)	12.2 - 14.0 (40-46)	F
23 SD R56.4 - R72.4	8F @ 3.7 (12)	3.0 (10)	2.4 (8)	73.2 - 97.5 (240 - 320)	6.7 - 17.7 (22 - 58)	F

8F = Eight lane freeway
10F = Ten lane freeway
F = Flat
R = Rolling
R/W = Right of Way

Note: Widths are in meters
( ) Widths in feet.

The location, direction and number of auxiliary lanes on I-5 are shown in Table 3.

TABLE 3
EXISTING AUXILIARY LANES

Location*	Direction	Number
Dairy Mart to SR-905/Tocayo Ave	Northbound	1*
SR-905/Tocayo Ave toCoronado Ave	Northbound	1
SR-905/Tocayo toCoronado Ave	Southbound	1
Coronado Ave to SR-75 (Palm Ave)	Southbound	1
SR-75 (Palm Ave) to Main Street	Northbound	1
SR-75 (Palm Ave) to Main Street	Southbound	1
Main Street to Palomar Street	Northbound	1
Main Street to Palomar Street	Southbound	1
Palomar Street to L Street	Northbound	1
Palomar Street to L Street	Southbound	1
L Street to J Street	Northbound	1
L Street to J Street	Southbound	1
J Street to H street	Northbound	1
J Street to H street	Southbound	1
H Street to E Street	Northbound	1
H Street to E Street	Southbound	1
E Street to SR-54	Northbound	1**
E Street to SR-54	Southbound	1
SR-54 to 24th Street	Northbound	1
SR-54 to 24th Street	Southbound	1
8th Street to Main Street	Southbound	1
Main Street to SR-15	Northbound	1
Main Street to SR-15	Southbound	1
28th Street to Coronado Bridge	Northbound	2
28th Street to Coronado Bridge	Southbound	1
Coronado Bridge to Crosby Street	Northbound	1
Coronado Bridge to Crosby Street	Southbound	2
Crosby Street to Imperial Avenue	Northbound	1
Imperial Avenue to SR-94	Northbound	1
SR-94 to Pershing Drive	Southbound	2
Pershing Drive to Park Boulevard	Northbound	2
Pershing Drive to Park Boulevard	Southbound	2
Park Boulevard to SR-163	Northbound	2
Park Boulevard to SR-163	Southbound	1
SR-163 to 6th Avenue	Northbound	1
SR-163 to 6th Avenue	Southbound	1
6th Avenue to Hawthorn Street	Northbound	1
6th Avenue to Hawthorn Street	Southbound	1
Hawthorn Street to India Street UC	Northbound	1
Hawthorn Street to India Street UC	Southbound	1
India Street UC to Pacific Highway	Northbound	1
Pacific Highway to Sassafras Street	Northbound	1
Sassafras (Front) to Washington St	Northbound	1
Sassafras (Front) to Washington St	Southbound	1
Washington St to Old Town Avenue	Northbound	1
Washington St to Old Town Avenue	Southbound	1
Old Town Avenue to I-8	Northbound	1
I-8 to Sea World Drive	Northbound	1
I-8 to Sea World Drive	Southbound	2
Sea World Drive to Clairemont Drive	Northbound	1
Sea World Drive to Clairemont Drive	Southbound	1
Clairemont Drive to Balboa (SR-274)	Northbound	1
Balboa Ave (SR-274) to SR-52	Southbound	1
SR-52 to Gilman Drive	Southbound	1
I-805 to Carmel Valley Road	Northbound	1
Carmel Valley Road to Del Mar Heights	Northbound	1
Del Mar Heights to Via De La Valle	Northbound	1
La Costa Avenue to Poinsettia Lane	Northbound	1
Poinsettia Ln to Palomar Airport Rd	Northbound	1
Palomar Airport Rd to Cannon Rd	Northbound	1
Carlsbad Village Dr to Las Flores Dr	Northbound	1
Carlsbad Village Dr to Las Flores Dr	Southbound	1
Las Flores Dr to SR-78	Northbound	1
Las Flores Dr to SR-78	Southbound	1
SR-78 to Oceanside Blvd	Northbound	1

SR-78 to Cassidy St	Southbound	1
Oceanside Blvd to Mission Ave	Northbound	1
Mission Avenue to SR-76	Southbound	1
SR-76 to Harbor Drive	Northbound	1*
SR-76 to Harbor Drive	Southbound	1

*(*) asterisks indicate a one or two lane barrier separated connector

Freeway ramp meters are designed to maximize the freeway's full capacity, reduce traffic congestion and accidents, and reduce motorist delays by improving commuter peak period travel times. Metered ramps control the rate at which traffic enters the freeway. In many cases, special lanes are provided on these ramps for carpools, vanpools and buses. Central computer control ramp metering is responsive to real time traffic speeds, volumes and congestion levels, and the metering rate can be adjusted as appropriate.

Table 4 lists existing ramp meter locations along I-5.

TABLE 4
EXISTING RAMP METERS

POST MILE	SOUTHBOUND	POST MILE	NORTHBOUND
R16.1	5th Avenue*	R17.0	Hawthorn Street
R17.3	Kettner Boulevard	R18.3	India Street
R18.1	Washington Street/Hancock Ave	R18.5	Washington Street*
R18.9	Old Town Avenue	R21.0	Sea World Drive
R20.7	Sea World Drive*	R22.4	Clairemont Drive*
R22.0	Eastbound Clairemont Drive	R33.1	Carmel Valley Road*
R22.2	Westbound Clairemont Drive*	R36.2	Eastbound Via De La Valle
R28.0	Nobel Drive*	R36.5	Westbound Via De La Valle*
R28.3	Eastbound La Jolla Village Drive*	R37.5	Lomas Santa Fe Drive*
R28.5	Westbound La Jolla Village Drive*	R38.7	Manchester Avenue
R32.8	Carmel Valley Road		
R33.9	Eastbound Del Mar Heights Road*		
R34.2	Westbound Del Mar Heights Road		
R36.1	Eastbound Via De La Valle*		
R36.3	Westbound Via De La Valle		
R37.3	Lomas Santa Fe Drive*		
R38.6	Manchester Avenue		
R39.6	Birmingham Drive		
R40.4	Santa Fe Drive*		
R41.4	Encinitas Boulevard*		

* Indicates presence of preferential carpool lane

There are several arterial streets paralleling I-5 that could provide an alternative to commuters wishing to avoid peak hour congestion on the freeway. These streets have the potential to serve as alternative routes for commuters. Currently, some of these streets fail to provide an effective alternative due to physical inadequacies, numerous traffic signals, access conflicts, and general traffic congestion. Improvements will be required in order to provide efficient alternatives for commuters. Listed in Table 5 are some selected arterial streets that parallel I-5.

TABLE 5
PARALLEL ARTERIALS

ARTERIAL NAME	DESCRIPTION
Beyer Boulevard	Dairy Mart Road to Main Street (Chula Vista)
Broadway	Main Street (Chula Vista) to National City south City limits
National City Boulevard	National City south City limits to San Diego south City limits
Harbor Drive	Civic Center Drive to Pacific Highway
Pacific Highway	Harbor Drive to Sea World Drive
Morena Boulevard	I-8 to SR-274
North Torrey Pines (S-21)	La Jolla Village Drive to Carmel Valley Road
El Camino Real	Carmel Valley Road to southeast of Manchester Avenue
Camino del Mar (S-21)	Del Mar south City limits to Solana Beach south City limits
Pacific Highway (S-21)	Solana Beach south City limits to Carlsbad south City limits
El Camino Real	Manchester Avenue to Mission Avenue (Oceanside)
Carlsbad (S-21)	Carlsbad south City limits to Oceanside south City limits
Melrose Drive	Palomar Airport Road to Oceanside Boulevard
Hill Street (S-21)	Oceanside south City limits to I-5

Park and ride facilities encourage and support the use of commuter or express transit and car/vanpooling for a portion of longer vehicle trips and consequently reduce vehicle miles of travel (VMT) within the San Diego region. There are several Park and Ride lots near or adjacent to I-5. They are at the following locations.

- I-8 at Taylor Street
- I-5 at Gilman Drive
- I-805 at Vista Sorrento Parkway
- I-5 at Carmel Valley Road
- I-5 at Birmingham Drive
- Calle Magdalena at San Dieguito United Methodist Church, Encinitas
- I-5 at La Costa Avenue
- I-5 at SR-78

There are a wide variety of transit options available within the I-5 corridor. Urban Rail service includes existing light rail transit (LRT) service between San Ysidro and Downtown San Diego. Intercity Rail service in the I-5 corridor includes the provision of AMTRAK service by the Los Angeles-San Diego Rail Corridor Agency (LOSSAN RCA). Commuter Rail service includes the Coast Express Rail, or Coaster service, which operates between Downtown San Diego and Oceanside. Intercounty commuter rail service is provided by Metrolink between Oceanside and Los Angeles. Further discussion of transit options is included in the transit component of the Concept Rationale section of this report.

Existing San Diego Transit express bus service operating in the I-5 corridor includes Route 30 operating between U.S. International University and downtown San Diego on 30 minute headways. This route utilizes I-5 between Mission Bay Drive and downtown. Express Route 50 operates on 30 minute headways between University Towne Center and downtown and utilizes I-5 south of Clairemont Drive. Additional peak period service

between University Towne Center and downtown operates on I-5 south of Gilman Drive. Several additional San Diego Transit local bus routes also serve passengers in the I-5 corridor, including service to and from the Old Town Transit Station.

Existing North County Transit District (NCTD) Express Route 310 operates on 45-60 minute headways between the Oceanside Transit Center and University Towne Center. This service utilizes I-5 between Mission Avenue in Oceanside and Genesee Avenue. Additional NCTD local bus service is also provided near the I-5 corridor in the NCTD service area.

Greyhound also provides intercity bus service in the I-5 corridor between San Diego and Los Angeles.

Bicycle facilities within the I-5 corridor consist of a variety of bicycle paths, lanes and routes including the Bay Route Bikeway and Rose Canyon Bike Path. Many of these bikeway facilities are utilized by a growing number of commuter bicyclists. A graphical depiction of these facilities and other bikeways throughout the San Diego region is shown on the SANDAG/Ridelink 1996 *San Diego Region Bike Map*.

ROUTE ANALYSIS

This section further discusses existing conditions and introduces future Post-1996 State Transportation Improvement Program (STIP)/No Build conditions for I-5. This section also includes a corridor growth and demographic analysis for existing and future conditions in the I-5 corridor.

Existing and Future (2020 No Build) Operating Conditions

Table 6 shows existing and future operating conditions for I-5. Existing conditions reflect 1995 data. Future conditions are based on Caltrans traffic projections and the San Diego Association of Governments (SANDAG) Series 8 Regional Population and Employment forecasts for the year 2020. Future No Build conditions assume completion of only those projects in the local transportation sales tax program (TransNet) and the 1996 STIP.

TABLE 6
EXISTING AND FUTURE (2020 NO BUILD) OPERATING CONDITIONS

County/P.M.	Location	Year	No.Lanes/ Facility Type	ADT	Peak Hour D/C Ratio	Peak Hour Operating LOS*
1 SD R0.0 - R0.9	International Border to I-805	1995	8F	72 400	0.41	A
		2020	8F	77 000	0.64	C
2 SD R0.9 - 3.1	I-805 to SR-905	1995	8F	58 500	0.33	A
		2020	8F	74 900	0..58	B
3 SD 3.1 - 4.7	SR-905 to Palm Avenue	1995	8F	91 200	0.52	B
		2020	8F	177 200	1.19	F0
4 SD 4.7 - 6.8	Palm Avenue to L Street	1995	8F	141 000	0.83	D
		2020	8F	227 100	1.50	F3
5 SD 6.8 - 9.4	L Street to SR-54	1995	8F	152 800	0.82	D
		2020	8F	238 400	1.68	F3
6 SD 9.4 - R12.6	SR-54 to I-15	1995	8F	171 300	1.08	F0
		2020	8F	268 600	1.83	F3
7 SD R12.6 - R14.1	I-15 to Coronado Bridge	1995	8F	152 700	1.05	F0
		2020	8F	222 700	1.52	F3
8 SD R14.1 - R15.0	Coronado Bridge to SR-94	1995	8F	176 100	0.99	E
		2020	8F	226 000	1.38	F2
9 SD 15.0 - R16.1	SR-94 to SR-163	1995	10F	198 600	1.00	E
		2020	10F	232 000	1.26	F1
10 SD R16.1 - R17.5	SR-163 to Pacific Highway ramp	1995	8F	184 300	1.01	F0
		2020	8F	263 700	1.35	F1
11 SD 17.5 - R20.1	Pacific Highway ramp to I-8	1995	8F	187 100	1.04	F0
		2020	8F	221 400	1.25	F0
12 SD R20.1 - R23.5	I-8 to SR-274	1995	8F	197 200	1.00	E
		2020	8F	259 100	1.38	F2
13 SD R23.5 - R26.0	SR-274 to SR-52	1995	8F	174 200	0.93	E
		2020	8F	225 000	1.37	F2
14 SD R26.0 - R30.7	SR-52 to I-805	1995	8F	143 900	0.83	D
		2020	8F + NBAux +DC	198 900	1.40	F2
15 SD R30.7 R32.9	I-805 to SR-56	1995	8F	221 500	1.12	F0
		2020	8F + HOV	325 000	1.58	F3
16 SD R32.9 - R38.6	SR-56 to Manchester Avenue	1995	8F	201 500	1.06	F0
		2020	8F + HOV**	272 500	1.73	F3
17 SD R38.6 - R42.7	Manchester Avenue to Leucadia Boulevard	1995	8F	173 000	0.91	D
		2020	8F	218 400	1.39	F2
18 SD R42.7 - R47.0	Leucadia Boulevard to Palomar Airport Road	1995	8F	161 800	0.89	D
		2020	8F	219 300	1.40	F2
19 SD R47.0 - R51.2	Palomar Airport Road to SR-78	1995	8F	166 500	0.92	D
		2020	8F	211 300	1.35	F1
20 SD R51.2 - R53.2	SR-78 to Mission Avenue	1995	8F	149 200	0.81	D
		2020	8F	209 500	1.42	F2
21 SD R53.2 - R53.9	Mission Avenue to SR-76	1995	8F	124 700	0.64	C
		2020	8F	177 000	1.16	F0
22 SD R53.9 - R56.4	SR-76 to U/R limit	1995	8F	111 800	0.60	B
		2020	8F	183 400	1.30	F1
23 SD R56.4 - R72.4	U/R limit to Orange County line	1995	8F	113 700	0.59	B
		2020	8F + BC	188 200	1.34	F1

ADT = Average Daily Traffic
AUX = Auxiliary lane
BC = Border Checkpoint expansion
D/C = Demand to Capacity
NB = Northbound
* Peak Hour Operating Level of Service includes provision of state highway, transit and arterial improvements.
** Northbound and southbound HOV lanes between I-805 and 0.3 miles north of Del Mar Heights Road.

Accident data for the three year period from November 1, 1993 to November 1, 1996 is analyzed for each segment of I-5. The actual total accident rate per million vehicle miles is compared with the average total accident rate per million vehicle miles. Segments where the actual rate exceed the average rate by at least one and one-half times include the International border to I-805 and SR-94 to SR-163.

Corridor Growth and Demographics

The SANDAG Series 8 Regional Population and Employment Forecast anticipates a population growth change in the San Diego Region from 2.50 million people in 1990 to 3.76 million people in 2015. This represents a 50.4 percent increase in population. Series 8 also projects the Housing Stock in the San Diego Region will increase from 946,240 units in 1990 to 1,371,971 units in 2015, a 45.0 percent change. The Total Labor Force is also expected to grow from 1,198,265 workers in 1990 to 1,561,394 workers in 2015 for an increase of 30.3 percent. These growth changes will create a demand for additional public facilities. Complementary land use and transportation improvements will be required.

The SANDAG Regional Growth Management Strategy (January,1993) was developed to help ensure that the impacts of this projected regional growth do not cause our quality of life to suffer. The Strategy is made up of four basic components: the quality of life factors, standards and objectives; recommended actions; consistency with local/regional plans; and monitoring of the SANDAG growth forecast. Recommendations regarding public facilities financing and siting, as well as land use phasing and distribution, are also included.

Table 7 shows current and future projected population for the nine jurisdictions that I-5 traverses within San Diego County. Tijuana, Mexico projections are also included.

TABLE 7
JURISDICTIONAL POPULATION GROWTH

Jurisdiction	1990	2000	2015	1990-2015 % Change
Imperial Beach	26 512	29 533	36 864	39
Chula Vista	135 163	155 293	163 723	21
National City	54 249	57 127	58 551	8
San Diego	1 110 549	1 301 573	1 505 117	36
Del Mar	4 860	5 395	5 877	21
Solana Beach	12 962	13 746	13 624	5
Encinitas	55 386	59 946	63 247	14
Carlsbad	63 126	87 706	112 865	79
Oceanside	128 398	162 498	190 553	48
Tijuana, Mexico	747 381	1 268 830	1 500 000	101

Source: SANDAG

I-5 traverses the densely populated coastal portion of San Diego County. The land use along the I-5 corridor generally consists of a variable development mix of shopping centers, regional employment, education centers, and single family and multiple unit residential developments. Several major employment centers within the I-5 corridor generate significant traffic volumes. Some of the trips originating in the high-growth north San Diego County area are attributable to former Orange County residents. These people have found more affordable housing in San Diego County, and are now commuting to their existing jobs in Orange County. From north of Oceanside to the Orange County line, I-5 traverses the U.S. Marine Corps Base, Camp Joseph H.

Pendleton, for 4.9 km (16 miles). The base covers 507.6 square km (196 square miles) and currently 36,000 Marines are stationed there. The number of personnel on base is expected to remain relatively stable in the future. Table 8 lists current and future housing, employment and population data for a four mile wide corridor the length of I-5 in San Diego County.

TABLE 8
CORRIDOR POPULATION, HOUSING AND EMPLOYMENT GROWTH

Location	Year	Total Population	% Change from Base Year	Total Households	% Change from Base Year	Total Employment	% Change from Base Year
International Border to	1990	29 900	-	8 100	-	6 400	-
SR-905	2000	38 200	27.8	9 900	22.2	7 100	10.9
	2010	46 100	54.2	12 700	56.8	9 000	40.6
	2015	47 700	59.5	13 400	65.4	9 800	53.1
SR-905 to SR-75	1990	35 700	-	10 700	-	4 800	-
	2000	38 800	8.7	11 200	4.7	5 000	4.2
	2010	37 900	6.2	11 500	7.5	5 800	20.8
	2015	39 600	10.9	12 300	9.8	5 900	22.9
SR-75 to SR-54	1990	58 300	-	24 100	-	37 900	-
	2000	62 600	7.4	24 300	0.8	38 800	2.4
	2010	60 800	4.3	24 400	1.2	44 100	16.4
	2015	62 500	7.2	25 300	4.9	46 000	21.4
SR-54 to SR-15	1990	62 300	-	14 500	-	50 800	-
	2000	67 600	8.5	15 300	5.5	51 000	0.4
	2010	75 800	21.7	18 500	27.6	54 300	6.9
	2015	76 400	22.6	18 900	30.3	55 400	9.1
SR-15 to SR-94	1990	41 400	-	10 800	-	26 400	-
	2000	47 600	15.0	19 200	77.8	26 900	1.9
	2010	53 900	30.2	22 400	107.4	28 800	9.1
	2015	68 400	65.2	24 600	227.7	28 900	9.5
SR-94 toPacific Highway	1990	33 800	-	15 300	-	78 100	-
	2000	41 200	21.9	18 400	20.2	77 300	-1.0
	2010	57 800	71.0	28 500	86.3	93 800	20.1
	2015	72 900	115.7	38 900	154.2	102 600	31.4
Pacific Highway to I-8	1990	34 500	-	17 800	-	53 400	-
	2000	38 600	11.9	18 600	4.5	50 800	-4.9
	2010	47 300	37.1	24 300	36.5	54 400	1.9
	2015	49 300	42.9	25 500	43.3	55 700	4.3
I-8 to SR-274	1990	32 100	-	15 300	-	19 000	-
	2000	35 300	10.0	15 600	2.0	18 600	-2.1
	2010	37 900	18.1	17 400	13.7	21 600	13.7
	2015	37 800	17.8	17 300	13.1	22 900	20.5
SR-274 to SR-52	1990	26 500	-	11 200	-	7 500	-
County Line	2000	29 300	10.6	11 600	3.6	7 100	-5.3
	2010	30 200	14.0	12 300	9.8	7 900	5.3
	2015	30 300	14.3	29 300	161.6	8 100	8.0
SR-52 to SR-56	1990	40 600	-	18 700	-	60 800	-
	2000	47 200	16.2	20 200	8.0	63 100	3.8
	2010	60 600	49.3	26 400	41.2	71 700	17.9
	2015	64 000	57.6	28 000	49.8	75 200	23.7
SR-56 to Manchester	1990	32 700	-	15 000	-	16 400	-
	2000	42 800	30.9	17 900	19.3	16 700	1.8
	2010	46 400	41.9	20 300	35.3	19 400	18.3
	2015	46 600	42.5	20 400	36.0	20 400	24.4
Manchester to Palomar	1990	44 100	-	19 500	-	20 100	-
Airport	2000	54 600	23.8	22 900	17.4	21 300	6.0
	2010	61 800	40.1	26 900	37.9	24 900	23.9
	2015	64 800	46.9	28 200	44.6	26 800	33.3
Palomar Airport to SR-78	1990	24 800	-	10 700	-	14 100	-
	2000	28 500	14.9	11 400	6.5	14 100	0.0
	2010	29 400	18.5	12 200	14.0	16 800	19.1
	2015	30 100	21.4	12 500	16.8	18 500	31.2
SR-78 to Orange County	1990	58 400	-	17 000	-	47 100	-
Line	2000	66 000	13.0	18 300	7.6	47 500	0.8
	2010	70 400	20.5	21 000	23.5	51 400	9.1
	2015	71 300	22.1	21 400	25.9	54 200	15.1
TOTALS:	**1990**	**555 100**	**-**	**208 700**	**-**	**442 800**	**-**
	2000	**638 300**	**15.0**	**234 800**	**12.5**	**445 300**	**0.6**
	2010	**716 300**	**29.0**	**278 800**	**33.6**	**503 900**	**13.8**
	2015	**761 700**	**37.2**	**316 000**	**51.4**	**530 400**	**19.8**

Another methodology to ensure compatibility between land use and the statewide transportation system is the provision of the Caltrans Development Review process. Potential future development projects are reviewed to determine what impacts they may have on State transportation facilities. Impacts can include level of service changes, right of way protection issues, operations and/or maintenance issues, or growth

inducing/cumulative impacts. Development Review also analyzes proposed developments to ensure consistency with regional and State transportation planning documents.

Potential major development projects within the I-5 corridor that will significantly increase congestion on area surface streets, freeway interchanges, and on I-5 are shown in Table 9. Each of these projects is expected to generate at least 8 000 daily trips. Although not listed in the table, there are a substantial number of smaller development projects that may have a cumulative impact on traffic in the corridor. It should also be noted that the table includes projects for which an Environmental Impact Report, a Specific Plan or a Master Plan has been or will be prepared. Because of uncertainties associated with the existing and future socioeconomic and political climate, the scale of development may be subject to change, and it is possible that some of the listed projects may not be developed.

TABLE 9
POTENTIAL TRIP INDUCING MAJOR DEVELOPMENT PROJECTS

SEGMENT	PROPOSED DEVELOPMENT	D.U.	COMM/IND square meters (square feet)	ACREAGE hectares (acres)	TRIPS GENERATED DAILY
2	San Ysidro Redevelopment	450	120 770 (1.3million)	310 (766)	54 700
5	Chula Vista Industrial Park		55 740 (600,000)	26.7 (66)	8 000
8	San Diego Convention Center		74 320 (800,000)	6.1 (15)	12 500
15	Torrey Reserve Heights	132	a lot	164.7 (407)	94 000
15	Sorrento Hills/ Torrey Hills	1,786	3 716(40,000)	210.4 (520)	65 100
15	Subarea V- Del Mar Mesa	688	0	826.4 (2042)	9 900
15	Carmel Valley Neighborhood 8A	952	0	162.7 (402)	10 000
16	Villages at Stallions Crossing		25 296 (272,300)	21.9 (54)	13 300
18	Encinitas Ranch	1,120	60 385 (650,000)	360.6 (891)	25 700
18	Green Valley	400	56 854 (612,000)	76.9 (190)	34 600
19	Carlsbad Ranch (Legoland)	980	47 564 (512,000)	180.9 (447)	69 400
21	Oceanside Pier Plaza Redevelopment	607	2 489 (26,800)	4.5 (11)	14 600

D.U. = Dwelling Units
COMM/IND = Commercial/Industrial

TRANSPORTATION CONCEPT (2020)

The 2020 Transportation Concept includes State highway, transit service, system management and travel reduction, goods movement, International border, aviation and nonmotorized components. The State highway and transit components are listed in Table 10, while the other components are discussed in the Concept Rationale section. These components are examined in segments for traffic analysis and other purposes. The segmentation shown is for planning purposes only and is subject to change pending further studies or project related activities. The State highway component is comprised of the facility type and the number of lanes for 2020, the ADT for 2020, the peak hour Demand to Capacity (D/C) Ratio for 2020, the peak hour Operating Level of Service (LOS) for 2020, and the Transportation Concept LOS for 2020. The 2020 traffic projections for Interstate 5 (I-5) are based on the San Diego Association of Government's (SANDAG) Series 8 regional population and employment forecasts and assume completion of the future regional transportation system. The 2020 traffic projections are subject to change based on periodic traffic forecasting model adjustments and ongoing supplemental transportation studies.

The 2020 peak hour Operating LOS includes all proposed transit service and State highway improvements. It also includes expansion and greater utilization of the existing arterial street network. Even with the inclusion of the proposed highway, transit and arterial improvements, and an increase in person trips, the 2020 peak hour Operating LOS for I-5 for segments 3 through 22 will be deficient.

The 2020 Transportation Concept LOS is based on the SANDAG Congestion Management Program (CMP). The CMP minimum standard of LOS 'E' is the 2020 Transportation Concept LOS for most segments of I-5. The 2020 Transportation Concept LOS for Segments 6-9 and Segments 15 and 16 is LOS ‘F0’. This is based on the *1996 CMP Update* in the *SANDAG 1997 RTP*, which shows a 1995 LOS of F for Segments 6-9 and Segments 15 and 16.

The 2020 peak hour Operating LOS is equal to or better than the minimum CMP standard in Segments 1, 2, 8, 9 and 15. In the remaining segments, additional improvements such as the implementation of Transportation Control Measure (TCM), Transportation System Management (TSM), and Transportation Demand Management (TDM) strategies will be needed.

The 2020 Transportation Concept LOS for the High Occupancy Vehicle lanes is LOS 'C' and is based on the Caltrans District 11 minimum HOV LOS standard.

TABLE 10
2020 TRANSPORTATION CONCEPT

Segment/ County/ Post Mile	Location	# of Lanes/ Facility Type *	ADT**	Peak Hour D/C Ratio	Peak Hour Operating LOS ***	Concept LOS ****
1 SD R0.0 - R0.9	International Border to I-805	8F + TBAI	121 200	0.99	E	E
2 SD R0.9 - 3.1	I-805 to SR-905	8F	81 800	0.63	B	E
3 SD 3.1 - 4.7	SR-905 to Palm Avenue	8F	153 600	1.14	F0	E
4 SD 4.7 - 6.8	Palm Avenue to L Street	8F	200 800	1.47	F3	E
5 SD 6.8 - 9.4	L Street to SR-54	8F	215 600	1.55	F3	E
6 SD 9.4 - R12.6	SR-54 to I-15	10F	228 300	1.30	F1	F0
7 SD R12.6 - R14.1	I-15 to Coronado Bridge	8F	207 900	1.44	F2	F0
8 SD R14.1 - R15.0	Coronado Bridge to SR-94	8F	214 500	1.24	F0	F0
9 SD 15.0 - R16.1	SR-94 to SR-163	10F	264 900	1.20	F0	F0
10 SD R16.1 - R17.5	SR-163 to Pacific Highway ramp	8F	253 700	1.46	F3	E
11 SD 17.5 - R20.1	Pacific Highway ramp to I-8	8F	209 000	1.08	F0	E
12 SD R20.1 - R23.5	I-8 to SR-274	8F + HOV/TA	257 800	1.24	F0	E
13 SD R23.5 - R26.0	SR-274 to SR-52	8F + HOV/TA	229 100	1.26	F1	E
14 SD R26.0 - R30.7	SR-52 to I-805	8F + HOV/TA	213 700	1.32	F1	E
15 SD R30.7 R32.9	I-805 to SR-56	8F + 6 O.S. +HOV/TA	415 500	1.24	F0	F0
16 SD R32.9 - R38.6	SR-56 to Manchester Avenue	10F + HOV	317 800	1.41	F2	F0
17 SD R38.6 - R42.7	Manchester Avenue to Leucadia Boulevard	10F + HOV	266 500	1.16	F0	E
18 SD R42.7 - R47.0	Leucadia Boulevard to Palomar Airport Road	10F + HOV	249 900	1.12	F0	E
19 SD R47.0 - R51.2	Palomar Airport Road to SR-78	10F + HOV	243 000	1.08	F0	E
20 SD R51.2 - R53.2	SR-78 to Mission Avenue	8F + HOV	248 800	1.46	F3	E
21 SD R53.2 - R53.9	Mission Avenue to SR-76	8F + HOV	209 100	1.28	F1	E
22 SD R53.9 - R56.4	SR-76 to U/R limit	8F + HOV	200 200	1.27	F1	E
23 SD R56.4 - R72.4	U/R limit to Orange County line	8F + HOV + BC +FC	200 000	1.26	F1	E

ADT = Average Daily Traffic
BC = Border Checkpoint expansion
D/C = Demand to Capacity
FC = Foothill Corridor connection
O.S. = Outer Separation
TA = Transit Alternative
TBAI = Transborder access improvements
8F = Eight lane freeway
10F = Ten lane freeway
HOV = High Occupancy Vehicle lanes

* The Concept LOS for the HOV lanes is LOS 'C' and the 2015 peak hour Operating LOS for the HOV lanes is expected to be LOS 'C' or better
** ADTs are from SANDAG Series 8 2020 (1996 RTP Preferred) Traffic Forecasting Model plots, July, 1996
*** Peak Hour Operating Level Of Service includes provision of state highway, transit and arterial improvements.
**** Concept LOS is based on the SANDAG CMP minimum LOS standard.
NOTE: Consideration should be given to upgrading Segments 20-23 to a 10 + 2HOV where feasible.

CONCEPT RATIONALE

An intermodal approach is necessary in order to provide for the projected increased person-trips in the I-5 corridor. This approach utilizes a wide variety of transportation improvement components to help achieve the 2020 Transportation Concept LOS.

Highway Component

The State highway component of the Concept includes upgrading portions of Segment 6 (SR-54 to I-15) from an eight lane freeway to a ten lane freeway. A small part of this segment is already an existing ten lane facility. This upgrade is included in both the *SANDAG 1996 Regional Transportation Plan (RTP)* and the *Caltrans 1995 Transportation System Development Plan (TSDP).*

The State highway component also includes the provision of HOV lanes from Segment 12 to Segment 23 (I-8 to Orange County Line). This concept is consistent with the *District 11 HOV System Plan* and the HOV Lane Plan included in the *SANDAG 1996 RTP.*

For Segments 15 and 16, the highway component of the 2020 Transportation Concept includes the I-5/I-805 widening and SR-56 interchange improvement project. Besides accommodating the HOV facility, it would provide for six additional contiguous but separated lanes (three in each direction) between the I-5/I-805 freeway junction (P.M. SD R30.7) and SR-56 (approximately P.M. SD R32.9). These lanes, as well as additional auxiliary lanes, will provide access to the Carmel Valley area via future SR-56, and will provide for a full bypass for I-5/I-805 truck traffic and a substantial reduction in the number of weaving maneuvers. Appropriate direct connector ramps, including the westbound to northbound and southbound to eastbound direct connectors, will also improve traffic flow in the area. The first stage of this project is currently under construction. Stage 2A is programmed in the 1996 State Transportation Improvement Program (STIP) for fiscal year (FY) 1998/99. Stages 2B and 3 are not programmed, but are included in both the *SANDAG 1996 RTP* and the *Caltrans 1995 TSDP*.

For a portion of Segment 16 to Segment 19 (Del Mar Heights Road to SR-78), the highway component includes upgrading the eight lane freeway to a ten lane freeway. This mainlane upgrade is in addition to the HOV facility proposed for these segments. This project is included in both the *SANDAG 1996 RTP* and the *Caltrans 1995 TSDP*.

Included in the Transportation Concept for Segment 22 is the proposed San Clemente border checkpoint expansion. Phase 1 and 1A calls for the construction of a median secondary inspection area; the addition of two northbound traffic lanes, one on each side of the existing lanes, and; a northbound truck deceleration lane prior to the truck scale exit ramp. Phase 2A includes the construction of canopies, one spanning the six northbound freeway lanes and one over each secondary inspection area. Phase 2B includes the replacement of existing overhead signs and structures with new overhead chaneable message signs and structures. These phases are expected to be completed in June, 1997. Phase 3 includes construction of an advanced technology one mile long northbound commuter lane. This lane will be an extension south of the new northbound traffic lane adjacent to the median. Completion is expected near the end of 1998.

The Transportation Concept for the northerly portion of Segment 22 includes a connection with the proposed Foothill Transportation Corridor. When complete, this 30 mile corridor will connect the Eastern Transportation Corridor (SR-261) in Orange County to I-5. One alternative crosses into the San Diego region and roughly parallels

the northern county line for several miles before intersecting with I-5 near Basilone Road. Some of the northerly portions of this corridor are already constructed. The portion affecting the San Diego region (Foothill-South) will be a high-technology toll road initially consisting of two lanes in each direction with a 20.7 meter (68 foot) median set aside for one or additional lanes in each direction and either HOV lanes or transit options. Construction of the Foothill Transportation Corridor-South (SR-241) is expected to begin in the year 2000, with completion expected in 2003. Further detailed information regarding this corridor can be found in the consultant prepared document entitled *Foothill Transportation Corridor South, Major Investment Study* (April, 1996). This project is also included in the *SANDAG 1996 RTP*.

For all segments, operational and safety improvements, auxiliary lanes, and ramp metering should also be provided where necessary.

Transit Component

The transit component of the 2020 Transportation Concept for I-5 includes a variety of transit modes such as Intercity Rail, Commuter Rail, Urban Rail, High Speed Rail, Bus Service, and Intermodal Transportation Center development.

The **Intercity Rail** portion of the Concept includes the provision of AMTRAK service by the Los Angeles-San Diego Rail Corridor Agency (LOSSAN RCA) in the I-5 corridor. Currently nine AMTRAK "San Diegan" trains per day are operating in this corridor providing service to a number of stations in San Diego, Orange, and Los Angeles Counties. Four of these nine trains are supported by Caltrans through the 403(b) program which allows states to contract with AMTRAK for new or additional service in certain corridors. Two of the nine trains operate as"Express San Diegans" which provide two northbound and two southbound trips per day during the weekdays. Due to recent legislation, the LOSSAN RCA may become part of an expanded Southern California Regional Rail Authority (SCRRA), however, this action is still pending. The new nine county joint powers agency would then assume responsibility for the operation of the San Diego/Los Angeles/Santa Barbara/San Luis Obispo intercity trains.

The **Commuter Rail** portion of the Concept includes Coast Express Rail, or the Coaster service, which was implemented in February,1995. The Coaster provides nine northbound and southbound peak period trains per day between San Diego and Oceanside Monday through Thursday. Two additional trains operate Friday nights and three trains provide Saturday only service. Coaster stations are located in downtown San Diego, Old Town, Sorrento Valley, Solana Beach, Encinitas, Carlsbad (Poinsettia), Carlsbad Village, and Oceanside. The Coaster is an AMTRAK operated service under the auspices of the San Diego Northern Railway (SDNR), a non-profit corporation created by the North San Diego County Transit Development Board in June,1994.

Intercounty commuter rail service between Oceanside and Los Angeles is provided by Metrolink, which is operated by the SCRRA. Currently three daily northbound and southbound trains provide this service. Future expansion of Metrolink further south into San Diego County is currently being studied.

The **Urban Rail** portion of the Concept for I-5 includes existing light rail transit (LRT) service between San Ysidro and downtown San Diego and new service between downtown and Old Town (opened June, 1996). The Concept also includes the identification of cost-effective solutions to transportation needs in the Mid-Coast Corridor Study area, which extends from just south of I-8 to Via De La Valle. Besides I-5, the corridor also includes portions of SR-52, SR-56, and I-805. An *Alternatives Analysis/Draft Environmental Impact Statement/Draft Environmental Impact Report for the Mid-Coast Corridor* was completed in February, 1995. This document described a number of alternatives being considered including the No Build, Transportation System Management (TSM), TSM with improvements to the Commuter Rail project, Commuter Rail Tunnel, HOV Lane and light rail transit (LRT) on one of two LRT alignment options.

The Final Environmental Impact Report for the Mid-Coast Corridor was certified by the Metropolitan Transit Development Board (MTDB) in October, 1995. At the same time, MTDB also approved the *Mid-Coast Corridor Locally Preferred Alternative Report.* The Locally Preferred Alternative consists of three projects: 1) constructing a new Coaster commuter rail station at Nobel Drive and adding parking at the existing Sorrento Valley Station, 2) constructing a light rail transit line between Old Town and North University City, and 3) providing HOV lanes in the median between I-8 and the Carmel Mountain Road overpass. Preliminary engineering and design work is currently being performed on the Mid-Coast LRT segment between the connection to the Mission Valley LRT line south of the San Diego River to the Balboa Avenue Station.

The Transportation Concept for I-5 also includes the development of a North I-5 Corridor Major Investment Study (MIS). The study corridor extends from SR-52 to the San Diego County/Orange County line. The MIS will quantify travel problems, evaluate alternative solutions, and recommend a program of phased improvements in the corridor. The MIS will analyze a number of alternatives including the No Build, TSM, Commuter Rail, Concurrent-Flow HOV, Partially Reversible HOV, Congestion Pricing, Arterial Street Improvements, General Purpose Lane Expansion, Full Caltrans Design Expansion, and Intelligent Vehicle System alternatives. The proposed work program for the MIS is expected to be completed in late 1997.

Approximately $30 million in Intermodal Surface Transportation Efficiency Act (ISTEA) funds have been authorized for studies of five **High Speed Rail** corridors, one of which is the Sacramento-San Francisco-Los Angeles-San Diego corridor. Detailed information can be found in the consultant-prepared draft copy of the *High Speed Rail Summary Report and Action Plan* (September, 1996).

Bus Service improvements in the I-5 corridor essentially focus on improving service frequencies and modifying routes to coordinate with future LRT service in a portion of the I-5 corridor. Potential improvements include implementation of feeder bus services to future LRT stations and Sorrento Valley, expansion of feeder bus services to existing LRT stations and implementation of an interim express bus service between Old Town and University City in advance of the LRT service. Intercity bus service in the I-5 corridor between San Diego and Los Angeles with interim stops is provided by Greyhound Bus Lines, which currently operates 28 northbound and 28 return

southbound trips per day. In addition, Transportes Intercalifornias provides Intercity service from Tijuana to Los Angeles in the I-5 corridor.

The transit component of the 2020 Transportation Concept for I-5 includes short-term and long-term improvements to the San Ysidro/International Border Light Rail Transit (LRT) Station in San Ysidro. The plan to develop this **San Ysidro Intermodal Transportation Center** includes 1) limiting the movement of private vehicles in the study area, 2) creating a pedestrian plaza, 3) creating a separate and identifiable boarding area for all modes of public and private transit, and 4) creating clear, direct access between modes to minimize walking distances and conflicting movements. Project completion of Phase 2 is currently scheduled for October, 1999.

System Management and Travel Reduction Component

Another component of the concept is greater utilization and expansion of the existing and proposed arterial street network in the corridor. These arterial improvements are expected to substantially increase mobility and reduce peak period demands on the freeway. They can provide a route for short intraregional trips where existing arterials are inadequate or not present and act as an alternative route for some regional trips. Capacity of existing arterials within the corridor is affected by physical inadequacies, access conflicts, numerous traffic signals, and general traffic congestion. Corridor capacity can be increased by realignment and/or widening, correcting physical inadequacies, minimizing side friction, and improving the traffic flows of arterials within the corridor. Improvements towards these ends include preferential signal treatment, limitation and separation of left-turn movements, limited driveway and other access controls, and surface street HOV lanes for ridesharing and transit.

SANDAG's *Mid-County Transportation Plan* (March,1995) is a comprehensive analysis of planned and alternative arterial circulation networks for the area bounded by Penasquitos Canyon on the south, Ramona on the east, the Pacific Ocean on the west, and Palomar Airport Road/San Marcos boulevard on the north. A portion of the I-5 corridor falls within this study area. The Plan discusses 27 key issues and recommendations to help solve local congestion problems within the Mid-County area. The Plan emphasizes the need for a strong parallel arterial network. Important arterials identified in the Plan include Black Mountain Road, Camino Del Mar, Camino Ruiz, Pomerado Road, El Camino Real, Pacific Coast Highway, Del Mar Heights Road and Sorrento Valley Road. The Plan also supports CALTRANS plans to add additional capacity in the I-5 coridor with the provision of HOV lanes or light rail transit.

SANDAG has been coordinating the development of the *1995 Regional Arterial System (RAS) Project Priority List* which includes unfunded/underfunded candidate projects that could compete for future discretionary transportation funding allocations. An additional study related to arterial street improvements is the SANDAG *Traffic Signal Optimization Program* (April, 1994). This program was developed to enhance inter-jurisdictional coordination, to provide detailed guidelines for the implementation of a county-wide traffic management system, and to identify a conceptual plan for future implementation of Intelligent Transportation System (ITS) technologies. The proposed signal system

improvements are expected to significantly reduce vehicle emissions and traffic congestion.

TSM improvements are expected to optimize traffic flow on the existing transportation systems within the I-5 corridor. Specifically, ramp meters will be installed in a variety of locations along I-5. The TSM Project Priority List provides some guidance regarding future locations for ramp meter installations. HOV bypass lanes will also be provided on appropriate ramps where feasible to encourage high occupancy vehicle use. An additional TSM measure in the 2020 Transportation Concept includes the provision of Park and Ride facilities in appropriate locations within the I-5 corridor. The consultant prepared *San Diego Regional Park and Ride Study* (March, 1994) analyzed and evaluated several planned and potential Park and Ride lot locations throughout the San Diego region, including the I-5 corridor.

In addition to the aforementioned Traffic Signal Optimization Program, air quality improvements will be achieved primarily by the implementation of TCMs. The goal of the *Transportation Control Measures for the Air Quality Plan* report developed by SANDAG in March, 1992 is to reduce traffic congestion and motor vehicle emissions in the San Diego air basin in order to meet the requirements of the state's Congestion Management Act, the California Clean Air Act of 1988, and the federal Clean Air Act Amendment of 1990. The components of this report include a commute travel reduction program, a college travel reduction program and a goods movement /truck operation control program; a Transportation Capacity Expansion Program; a Traffic Systems Management Program; and an Indirect Source Control Program which includes a general travel reduction program and a land use program. TCM improvements are intended to reduce travel demand during peak period traffic hours. Additional TCM components include staggered work hours, parking management, developer and employer incentives, and implementation of ordinances.

TSM and TCM air quality improvements tend to overlap and work synergistically. The total effect of these improvements will improve air quality, will assist in alleviating traffic congestion, and will result in an increased number of person-trips within the I-5 corridor.

Goods Movement Component

Under the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, additional emphasis is being placed on the movement of goods in an integrated transportation network. It is essential to identify critical elements within major goods movement corridors in order to develop effective strategies for managing, maintaining and improving transportation system connectivity. Goods movement planning incorporates analysis of impacts on noise, air quality, land use, congestion and safety. Goods movement issues can have a significant economic impact on our regional economy. The movement of goods in San Diego involves the systems of rail, ports and shipping, trucking, and air cargo.

Rail freight to and from San Diego is transported via the north-south Burlington Northern and Santa Fe (BN&SF) rail line that parallels the I-5 corridor and connects San Diego to Los Angeles and other intercontinental trunk lines. Freight shipment over the

BN&SF line is primarily composed of automobiles, steel, soybean oil, lumber, grain and potash. Military related freight is trucked to Camp Pendleton from a rail yard just north of Oceanside. The BN&SF line provides the only existing rail access to the **San Diego Unified Port District (SDUPD)** facilities.

SDUPD facilities are another part of the goods movement component. The two primary locations for waterborne shipping activity are the 10th Avenue Marine terminal in San Diego and the 24th Street Marine terminal in National City. Facilities at these terminals include warehouses, lumber storage facilities, bulk storage silo complexes, fuel and liquid storage bunkers and tanks, cold storage, and temporary automobile sites. The Port handled 856,800 metric tons (952,000 tons) of cargo in 1995. A number of improvements should be made to enhance Port operations, including attracting additional cargo growth, reducing operating costs, implementing tariff increases, tapping the Southeast Asia and South American container carrier market, improving utilization of the cold storage facility, and capturing a portion of the container business from the maquiladora industries in the border region.. The BN&SF Railroad has agreed to provide track improvements in National City, including new parallel "staging" tracks, a circle "loading" track and heavier gauge rails between the 24th Street Marine terminal and the 10th Avenue Marine terminal. Additional transportation improvements include reopening the San Diego and Imperial Valley (SD&IV) rail line with access to Port facilities.

Trucking plays an important role in goods movement along the I-5 corridor. Historical data shows an increase in both freeway and non-freeway light duty and heavy duty truck traffic over the years. I-5 is part of a national truck route network designated by the 1982 Surface Transportation Assistance Act (STAA). Many of the goods arriving by sea to SDUPD facilities are further distributed by truck. Ground access to both marine terminals is via surface streets and I-5, however, there is inadequate signage directing commercial truck traffic to the 10th Avenue Marine terminal. In addition, the proposed San Diego Convention Center expansion may create an undesirable mix of truck and passenger traffic on the Eighth Street access route to the 10th Avenue Marine terminal. Improvements will be needed.

San Diego International Airport-Lindbergh Field is San Diego's main airport for **air cargo**. Non-express air cargo typically travels in the bellies of wide body passenger aircraft on medium range (600-1500 miles) and long range (greater than 1500 miles) routes. Integrated carriers such as Federal Express, Burlington, CF Emory, Airborne and UPS account for two-thirds all air freight out of Lindbergh Field. Improvements such as additional cargo storage buildings, expanded cargo ramp areas and better cargo truck access will be needed.

Detailed information regarding goods movement and the SDUPD can be found in consultant-prepared report entitled *Strategic Plan for the Port of San Diego Unified Port District* (June, 1996).

International Border Component

The ISTEA also requires studying the advisability of establishing a discretionary international border crossing program and the development of a multimodal assessment of existing and emerging international trade corridors within Canada, Mexico and the United States. Because of District 11's geographic location adjacent to the State of Baja California, Mexico, and the passage of the North American Free Trade Agreement (NAFTA), it is expected that transportation and trade issues related to the California/Mexico International border will increase in importance in the future.

The NAFTA NET is a transportation network which links the POEs and the international border region to the existing transportation system. The overall goals of NAFTA NET include facilitating and increasing trade of goods and services, ensuring a safe cross border trucking industry and improving the multimodal transportation network leading to the major international border crossings. Caltrans has identified the transportation corridors in District 11 which comprise the NAFTA NET. In San Diego County, NAFTA NET routes include SR-94, SR-125, SR-188, SR-905 and Otay Mesa Road. However, I-5 is an important goods movement route that accommodates a substantial amount of commercial vehicle traffic between Mexico (via the Otay Mesa POE and Route 905) and California and the United States.

I-5 provides primary access to the San Ysidro POE, which is the busiest international land border crossing in the world. The existing San Ysidro POE is currently handling far more vehicular traffic than it can effectively process. Improvements will be needed. To address some of these concerns, the consultant-prepared *Virginia Avenue Border Crossing Feasibility Study Final Report* was completed for SANDAG in May, 1996. Eight planning concepts were developed and studied to alleviate existing deficiencies at the POE. Of these eight concepts, two proposed alternatives have been selected for future preliminary engineering. Both of these alternatives are hybrids of the original eight planning concepts.

The first preliminary engineering alternative provides for: 1) all of I-5 at the San Ysidro gateway to be used for northbound traffic; 2) A new southbound freeway connection from I-5 and I-805 to Virginia Avenue; 3) A new southbound vehicular connection from Camino De La Plaza to the Virginia Avenue gateway; 4) A new vehicular bridge over the Tijuana River; and 5) A new pedestrian bridge connecting Virginia Avenue to Avenida Revolucion. The second preliminary engineering alternative provides for a northbound entry into the U.S. at Virginia Avenue which would be limited to HOV, transit, and other types of vehicles that can utilize the new speedy processing systems being developed by U.S. Federal Inspection Services (FIS) The I-5 north and south roadways would remain as they are today, however, a widened Camino De La Plaza and a relocated northbound I-5 ramp are part of this alternative. Further study is required of these alternatives. These are long term projects that are expected to be developed after the year 2012.

Another project which affects the international border area, including Virginia Avenue, is entitled "The International Gateway of Americas". This is a major redevelopment proposal by LandGrant Development which includes commercial, retail, hotel and office development. The proposal includes appropriate modification of the border area road

system and a proposed extension/relocation of the San Diego Trolley across the Camino de la Plaza overcrossing to the west side of I-5.

There are several additional proposed short term and long term improvements to border area transportation systems besides I-5 that will improve and provide access to the existing and future international Port-of-Entry (POE) facilities. In addition, there are numerous planning studies underway related to transborder transportation and goods movement activities. Detailed information regarding these improvements and studies can be found in the Caltrans report entitled *Transportation Issues Along the California/Mexico Border* (December, 1996 draft).

Aviation Component

The Aviation Component of the Concept for I-5 includes Lindbergh Field, located approximately two miles northwest of the City of San Diego's central business district Lindbergh Field is the major air carrier airport in the San Diego region with more than 227,000 annual takeoffs and landings serving 13.3 million passengers in 1995 with both domestic and international service. The number of annual takeoffs and landings is currently constrained to 240,000 by operational and policy considerations. Future improvements, including airport facility management actions and a major capital improvement program will be needed to accommodate projected future growth. Ground access to the airport is via I-5 and North Harbor Drive. To alleviate congestion on this facility, consideration should be given to providing additional capacity on Harbor Drive, separating airport traffic from city street traffic, and/or refocusing airport traffic onto a new dedicated facility.

Other aviation facilities near the I-5 corridor include the Imperial Beach Naval Outlying Field, which is used primarily for helicopter operations. Near the North I-5 corridor, McClellan/Palomar airport is a general aviation facility in Carlsbad with over 204,000 annual takeoffs and landings and over 450 aircraft based at the airport. Another general aviation facility easterly of I-5 is the Oceanside Municipal Airport, with over 58,000 takeoffs and landing and over 63 aircraft based at the airport.

Nonmotorized Component

The Nonmotorized Component includes continued utilization of the existing Regional Bikeway System, the Bus Bicycle Rack Program and the Bicycle Locker program at Park and Ride lots. Within the I-5 corridor, bicyclists use a number of bike paths, bike lanes and bike routes that are part of the Regional Bikeway System. Bicycle travel is also currently allowed on the freeway shoulders of I-5 in two locations; between Genesee Avenue and Sorrento Valley Road, and between Oceanside Harbor Drive and Las Pulgas Road. A consultant prepared *Coastal Rail Trail Project Study Report* (draft January 1997) proposes to develop a 42 mile bicycle facility from Oceanside to San Diego parallel to the rail corridor. The bicycle facility will consist of a series of interconnected bicycle paths, bicycle lanes and bicycle routes for use by bicylists, walkers, runners and rollerbladers/skaters. Additional future bicycle facilities are planned for numerous surface streets within the I-5 corridor, including San Diego

Bayshore Bikeway improvements along or near to the inactive SD & AE railroad around the southern perimeter of San Diego Bay.

AIR QUALITY

The San Diego region's air basin was originally designated as a nonattainment area for ozone (O_3) and classified as "severe" under both the State and federal Clean Air Acts. In July, 1993 the federal government lowered San Diego's classification to "serious"; however, the State classification remained severe until recently when it was also lowered to "serious" by the State Air Resources Board. The San Diego region's air basin is not expected to be in attainment with State and federal air quality standards until 1999.

California has submitted a request to the Environmental Protection Agency (EPA) for redesignation of San Diego from non-attainment to attainment for carbon monoxide (CO). EPA is currently reviewing this proposal.

The 1988 California Clean Air Act (CCAA) requires the development of a new air quality plan from air districts that did not attain the State's standards in 1987. The San Diego County Air Pollution Control District (APCD) adopted the Regional Air Quality Strategy (RAQS) in June 1992. The plan incorporates strategies directed at reducing pollutants and increasing vehicle occupancy in an effort for the region to achieve the State's standards. The RAQS will be implemented by the San Diego Air Pollution Control District, Caltrans, SANDAG, the transit operators, and the cities of this region.

As part of this RAQS, SANDAG has developed transportation related strategies towards attainment of the plans goals. These strategies are composed of Transportation Control Measures (TCM) programs planned to achieve the following requirements of the CCAA: a one and four-tenths minimum average vehicle occupancy during weekday commute hours by 1999, no net increase in emissions relative to population growth after 1997, and contribute to the required reduction in District-wide emissions of five percent per year, averaged every consecutive three-year period. The TCM program is comprised of the following measures: (1.) TDM; (2.) Transportation Capacity Expansion; (3.) Traffic Systems Management; and (4.) Indirect Source Control (ISC). The four measures of the TCM program and their tactics and elements are summarized in the outline that follows. A more detailed discussion of each measure follows the outline.

TRANSPORTATION CONTROL MEASURES PROGRAM SUMMARY

1.0 TDM MEASURE

- 1.1 Commute Travel Reduction Program Tactic
  - A. Employment Trip Reduction Program and Ordinance
  - B. Ridesharing Program Element
  - C. Parking Management Program Element
  - D. Telecommuting Element
  - E. Compressed Work Week Element
  - F. Employer Transit Subsidy Element
  - G. Flexible Work Hours Element
  - H. Staggered Work Hours Element
- 1.2 College Travel Reduction Program Tactic
  - A. Travel Reduction Program and Ordinance Element
  - B. Student Transit Pass and Subsidy Element
- 1.3 Goods Movement/Truck Operation Program Tactic
  - A. Goods Movement/Truck Travel Reduction Ordinance Element
  - B. Incident Management and Prevention Program Element
  - C. Motorist Information System Element
- 1.4 Non-Commute Travel Reduction Program Tactic

2.0 TRANSPORTATION CAPACITY EXPANSION MEASURE

- 2.1 Transit Improvements and Expansion Program Tactic
- 2.2 Vanpool Program Tactic
- 2.3 HOV Lanes Tactic
- 2.4 Park and Ride Lot Facilities Tactic
- 2.5 Bicycle Facilities Tactic

3.0 TRAFFIC SYSTEMS MANAGEMENT MEASURE

- 3.1 Traffic Flow Improvements Tactic

4.0 INDIRECT SOURCE CONTROL (ISC) PROGRAM

1.0 TDM Measure

The TDM measure consists of four principle tactics. The first tactic is (1.1) the Commute Travel Reduction Program. It is composed of eight elements. They are (A.) Employment Trip Reduction Program and Ordinance, (B.) Ridesharing Program, (C.) Parking Management Program, (D.) Telecommuting, (E.) Compressed Work Week, (F.) Employer Transit Subsidy, (G.) Flexible Work Hours, and (H.) Staggered Work Hours elements.

One important element of the Commute Travel Reduction Program Tactic as it relates to congestion relief is the employment trip reduction program and ordinance. The goal of this tactic is to reduce transportation source emissions by increasing the average number of persons per vehicle during peak weekday periods. As part of this, the San Diego City Council adopted the "City of San Diego Transportation Demand

Management Ordinance" in September 1989. This ordinance was rescinded in late 1995 in response to air quality legislation changes. However, the elements of the ordinance remain intact and are an integral part of the City of San Diego's commute trip reduction strategy planning.

Another important element is the Ridesharing Program. It provides for the establishment of Transportation Management Associations (TMA's) to encourage employees to commute by alternative modes. Currently, there are three TMA's serving the San Diego region.

The second tactic in the proposed TDM measure is (1.2) the College Travel Reduction Program and Ordinance. It contains two elements. They are (A.) the Travel Reduction Program and Ordinance, and (B.) the Student Transit Pass Subsidy Program. The College Trip Reduction Program and Ordinance will have a similar impact on congestion relief as the Commute Travel Reduction Program.

The third tactic in the proposed TDM measure is (1.3) the Goods Movement/Truck Operation Program. It is comprised of three elements. They are (A.) the Goods Movement/Truck Travel Reduction Ordinance, (B.) the Incident Management and Prevention Program, and (C.) the Motorist Information System.

An important element of the Goods Movement/Truck Operation Program as it relates to congestion relief is the provision of the Motorist Information System. Consistent with the goals of the element, the District 11 Long Range Operations Plan (LROP) proposed a Transportation Management Center (TMC). A new TMC has recently been constructed in the Kearny Mesa area and will eventually operate 24 hours a day. The new TMC will utilize state-of-the-art technology to rapidly identify accidents and other non-recurrent freeway congestion and will issue appropriate information to motorists through the use of changeable message signs, highway advisory radio, and possibly by the use of in-vehicle computers.

The fourth tactic in the proposed TDM measure is (1.4) the Non-Commute Travel Reduction Program. This program will educate drivers in ways to reduce or change the use of their automobiles with a goal of reducing auto emissions. The programs goal is a reduction equivalent to one trip per day per driver.

While the City of San Diego no longer has the authority to mandate trip reduction policies, trip reduction requirements of the CCAA still apply and efforts to implement strategies to achieve trip reduction goals will continue.

2.0 Transportation Capacity Expansion Measure

The second major TCM measure is the Transportation Capacity Expansion Measure. The purpose of the Transportation Capacity Expansion Measure is to reduce vehicle miles traveled in the region. The Transportation Capacity Expansion Measure consists of five tactics. They are (2.1) the Transit Improvements and Expansion Program, (2.2) the Vanpool Program, (2.3) HOV Lanes, (2.4) Park and Ride Lot Facilities, and (2.5) Bicycle Facilities.

3.0 Traffic Systems Management Measure

The third major TCM measure is the Traffic Systems Management Measure. The goal of the Traffic Flow Improvement Tactic is to improve the flow of traffic through the coordination of traffic signals and computerized signal controls and to achieve a 10 percent increase in speed on arterial streets by the year 2000. The LROP recommends that a plan be prepared for the systematic review of all signalized intersections on State highways. This plan will include a discussion of signalized local parallel routes.

4.0 ISC Measure

The fourth major TCM measure is the ISC Program. The purpose of the program is to reduce the emissions of motor vehicles associated with land uses identified as indirect sources. The controls will employ TCMs and land use measures to attain the air quality goals.

INTELLIGENT TRANSPORTATION SYSTEM (ITS)

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) calls for the creation of an economically efficient and environmentally sound transportation system that will move people and goods in an energy efficient manner. This can no longer be done simply by adding to the existing highway system. The Intelligent Transportation System (ITS) offers the potential to improve safety and efficiency in nearly every function of our complex multi-modal transportation system by applying a broad range of diverse technologies. The U.S. Department of Transportation has defined an Intelligent Transportation Infrastructure (ITI) Program consisting of traffic detection and monitoring, communications and control systems required to support a variety of ITS products and services.

New Technology

ITI/ITS Programs offer the potential to deploy and operate traffic signal control systems, freeway management systems, transit management systems, incident management systems, electronic fare payment systems, electronic collection systems and multimodal traveler information systems.

Under the ISTEA ITS program, four transportation corridors in the nation have been selected to showcase coordinated intelligent transportation system elements. One of the priority corridors selected is the Southern California Intelligent Transportation Systems (ITS) Priority Corridor. This corridor lies within the major urbanized and adjacent non-urbanized areas of Ventura, Los Angeles, San Bernardino, Riverside and San Diego Counties and all of Orange County. In San Diego, I-5 is included as part of the corridor. ITS activities in the San Diego region include the innovative use of the existing solar powered freeway call box infrastructure, the operation of the multifunctional/multimodal Transportation Management Center (TMC), the provision of automated traffic operation information to fleet operators in the goods movement, transit, and hazardous material industries, and the development of an ITS International

Border Crossing Operations Strategic Plan. Additional ITS technologies that could be utilized in the San Diego region include vehicle navigation systems, computerized roadway sensors, changeable message signs, and television roadway monitoring devices.

Another related new technology is the future provision of an automated highway system (AHS). The ISTEA of 1991 mandated development of an automated highway and a vehicle prototype from which future fully automated intelligent vehicle highway systems can be developed. Caltrans is a core member of The National Automated Highway System Consortium (NAHSC), which was formed to specify, develop and demonstrate a prototype of a working AHS in the United States by 2001. AHS technology will consist of at least two major subsystems, including vehicles and infrastructure. AHS will showcase features such as adaptive cruise control, object detection, collision warning and avoidance systems, longitudinal and lateral vehicle control, maneuver coordination and navigation systems. The specifications will provide for evolutionary deployment that can be tailored to meet regional and local transportation needs. The Consortium will seek opportunities for early introduction of vehicle and highway automation technologies to achieve early benefits for all surface transportation users. In the San Diego region, an AHS Proof-of-Technical-Feasibility Demonstration is scheduled for Summer, 1997 on the existing I-15 reversible HOV lanes.

Congestion Pricing Studies

An additional strategy that should be studied in the future is congestion pricing, which is a direct market incentive to ensure that transportation system users pay the "real" costs of the transportation benefits they receive. One purpose of congestion pricing is to reduce travel demand. With the advent of technological advances such as electronic toll collection and traffic management (ETTM) and automatic vehicle identification (AVI) systems, congestion pricing could be developed for a wide variety of transportation facilities. The ISTEA of 1991 provides funding of up to $25 million annually over the 1992-97 period to support Federal participation in congestion pricing pilot programs. SANDAG applied for and was awarded a federal technical assistance grant from the Federal Highway Administration (FHWA) for a two-phased pilot program which will allow single occupant vehicle drivers to “Buy-in” to the existing I-15 reversible HOV lanes. The intent of the this pilot program is to test market-based roadway pricing concepts to better manage traffic congestion and air quality in the region while raising revenues for the expansion of transit services and HOV facility improvements.

COMPARISON OF CONCEPTS

The purpose of this section is to document alternative Transportation Concepts that were considered. The Concept from the July, 1990 Route Concept Report (RCR) for the year 2010 is compared with this 1996 TCR for the year 2020.

In 1984, the original Concepts were set based on the SANDAG Series 6 Population and Travel Forecasts for the year 2005. The 1990 and 1991 Route Concepts were based on the SANDAG Series 7 Population and Travel Forecasts for the year 2010. The 1996 Transportation Concepts are based on the SANDAG Series 8 Population and Travel

Forecasts for the year 2020. Table 11 is comprised of a segment by segment comparison between the 1991 Route Concept Report and this current updated Transportation Concept Report.

TABLE 11
COMPARISON OF CONCEPTS

1991 Route Concept for 2010 (Series 7 2010 Forecast)		1996 Transportation Concept for 2020 (Series 8 2020 Forecast)	
Location	**No. Lanes/ Facility Type/ Concept LOS**	**Location**	**No. Lanes/ Facility Type/ Concept LOS**
International Border to I-805	8F/D	International Border to I-805	8F + TBAI/E
I-805 to SR-905	8F/D	I-805 to SR-905	8F/E
SR-905 to Palm Avenue	8F/D	SR-905 to Palm Avenue	8F/E
Palm Avenue to L Street	8F/E	Palm Avenue to L Street	8F/E
L Street to SR-54	8F/F0	L Street to SR-54	8F/E
SR-54 to I-15	10F/F0	SR-54 to I-15	10F/F0
I-15 to Coronado Bridge	8F/F0	I-15 to Coronado Bridge	8F/F0
Coronado Bridge to SR-94	8F/F0	Coronado Bridge to SR-94	8F/F0
SR-94 to SR-163	10F/F0	SR-94 to SR-163	10F/F0
SR-163 to Pacific Highway ramp	8F/F0	SR-163 to Pacific Highway ramp	8F/E
Pacific Highway ramp to I-8	8F/E	Pacific Highway ramp to I-8	8F/E
I-8 to SR-274	8F + 2 HOV/E	I-8 to SR-274	8F + HOV/TA/E
SR-274 to SR-52	8F + 2 HOV/E	SR-274 to SR-52	8F + HOV/TA/E
SR-52 to I-805	8F + 2 HOV/F0	SR-52 to I-805	8F + HOV/TA/E
I-805 to SR-56	8F + 6 O.S. +2HOV/E	I-805 to SR-56	8F + 6 O.S. +HOV/TA/F0
SR-56 to Manchester Avenue	10F + 2HOV/F0	SR-56 to Manchester Avenue	10F + HOV/F0
Manchester Avenue to Leucadia Boulevard	10F + 2HOV/E	Manchester Avenue to Leucadia Boulevard	10F + HOV/E
Leucadia Boulevard to Palomar Airport Road	10F + 2HOV/E	Leucadia Boulevard to Palomar Airport Road	10F + HOV/E
Palomar Airport Road to SR-78	10F + 2HOV/E	Palomar Airport Road to SR-78	10F + HOV/E
SR-78 to new SR-76	8F + 2HOV*/E	SR-78 to Mission Avenue	8F + HOV/E
		Mission Avenue to SR-76	8F + HOV/E
New SR-76 to U/R Limit	8F + 2HOV/E	SR-76 to U/R limit	8F + HOV/E
U/R limit to Orange County line	8F + 2HOV/E	U/R limit to Orange County line	8F + HOV + BC +FC/E

* Study 10F + 2HOV
BC = Border Checkpoint expansion
FC = Foothill Corridor connection
HOV = High Occupancy Vehicle lanes
O.S. = Outer separation
TA = Transit Alternative
TBAI = Transborder access improvements

Table 12 identifies the I-5 segments where, with the Concept Facility in place, the 2020 Operating LOS remains at a deficient level. This includes all segments except Segment 1 and 2. This table illustrates the LOS's that could be achieved by enlarging the facility beyond the Concept Facility size. For these segments the table lists increasingly larger facility sizes, starting with the number of lanes called for in the Transportation Concept and ending with the number of lanes required to achieve the CMP minimum standard of LOS 'E'. The Concept Facility information is shown on the line adjacent to the segment number. The larger alternative facility information is shown in italics.

The table shows that extremely large facilities, as wide as 16 lanes in some segments, would be necessary to reach LOS 'E'. Due to high costs and associated

impracticalities, these facility sizes are not proposed as the Transportation Concept for these segments.

TABLE 12
MAINLANES REQUIRED TO ACHIEVE IMPROVED LEVEL OF SERVICE

Segment	Location	Concept Facility/ Alternative Facilities	D/C Ratio	Peak Hour Operating LOS
3	SR-905 to Palm Avenue	8F	1.14	F0
		10F	*0.84*	*D*
4	Palm Avenue to L Street	8F	1.47	F3
		10F	*1.18*	*F0*
		12F	*0.98*	*E*
5	L Street to SR-54	8F	1.55	F3
		10F	*1.24*	*F0*
		12F	*1.03*	*F0*
		14F	*0.88*	*D*
6	SR-54 to I-15	10F	1.30	F1
		12F	*1.08*	*F0*
		14F	*0.93*	*E*
7	I-15 to Corronado Bridge	8F	1.44	F2
		10F	*1.15*	*F0*
		12F	*0.96*	*E*
8	Coronado Bridge to SR-94	8F	1.24	F0
		10F	*1.07*	*F0*
		12F	*0.89*	*D*
9	SR-94 to SR-163	10F	1.20	F0
		12F	*1.06*	*F0*
		14F	*0.91*	*D*
10	SR-163 to Pacific Highway ramp	8F	1.46	F3
		10F	*1.26*	*F0*
		12F	*1.05*	*F0*
		14F	*0.90*	*D*
11	Pacific Highway ramp to I-8	8F	1.08	F0
		10F	*0.93*	*E*
12	I-8 to SR-274	8F + HOV/TA	1.24	F0
		10F + HOV/TA	*1.07*	*F0*
		12F + HOV/TA	*0.89*	*D*
13	SR-274 to SR-52	8F + HOV/TA	1.26	F1
		10F + HOV/TA	*1.01*	*F0*
		12F + HOV/TA	*0.84*	*D*
14	SR-52 to I-805	8F + HOV/TA	1.32	F1
		10F + HOV/TA	*1.06*	*F0*
		12F + HOV/	*0.88*	*D*
15	I-805 to SR-56	8F + 6 O.S. + HOV/TA	1.24	F0
		10F + 6 O.S. + HOV/TA	*1.07*	*F0*
		12F + 6 O.S. + HOV/TA	*0.95*	*E*
16	SR-56 to Manchester Avenue	10F + HOV	1.41	F2
		12F + HOV	*1.17*	*F0*
		14F + HOV	*1.00*	*E*
17	Manchester to Leucadia	10F + HOV	1.16	F0
		12F + HOV	*0.97*	*E*
18	Leucadia to Palomar Airport	10F + HOV	1.12	F0
		12F + HOV	*0.94*	*E*
19	Palomar Airport to SR-78	10F + HOV	1.08	F0
		12F + HOV	*0.90*	*D*
20	SR-78 to Mission Avenue	8F + HOV	1.46	F3
		10F + HOV	*1.17*	*F0*
		12F + HOV	*0.97*	*E*
21	Mission Avenue to SR-76	8F + HOV	1.28	F1
		10F + HOV	*1.03*	*F0*
		12F + HOV	*0.86*	*D*
22	SR-76 to Urban/Rural limit	8F + HOV	1.20	F0
		10F + HOV	*1.01*	*F0*
		12F + HOV	*0.84*	*D*
23	U/R limit to Orange Co Line	8F +HOV +BC + FC	1.24	F0
		10F +HOV +BC + FC	*1.01*	*F0*
		12F +HOV +BC + FC	*1.24*	*F0*

BC = Border Checkpoint expansion
D/C = Demand to Capacity

FC = Foothill Corridor connection
O.S. = Outer Separation
HOV = High Occupancy Vehicle Lane
TA = Transit Alternative
WB = Widen Bridge

2020 TRANSPORTATION CONCEPT FACILITY IMPROVEMENTS

Table 13 shows highway improvements to I-5 that are part of the 2020 Transportation Concept. Segments without proposed highway improvements are not included. The peak hour D/C ratio and peak hour Operating LOS listed assume completion of the proposed highway improvements. These improvements are also shown on the Transportation Concept Map at the end of this report.

TABLE 13
2020 TRANSPORTATION CONCEPT FACILITY IMPROVEMENTS

Segment/ County/ Post Mile	Location	Improvement Description *	Peak Hour D/C Ratio	Peak Hour Operating LOS **	Concept LOS***
1 SD R0.0 - R0.9	International Border to I-805	8F + transborder access improvements	0.99	E	E
6 SD 9.4 - 12.6	SR-54 to I-15	Upgrade from 8F to 10F	1.30	F1	F0
12 SD R20.1 - R23.5	I-8 to SR-274	Add HOV/TA	1.24	F0	E
13 SD R23.5 - R26.0	SR-274 to SR-52	Add HOV/TA	1.26	F1	E
14 SD R26.0 - R30.7	SR-52 to I-805	Add HOV/TA	1.32	F1	E
15 SD R30.7 R32.9	I-805 to SR-56	Add 6 O.S. +HOV/TA	1.24	F0	F0
16 SD R32.9 - R38.6	SR-56 to Manchester Avenue	Upgrade from 8F to 10F + HOV	1.41	F2	F0
17 SD R38.6 - R42.7	Manchester Avenue to Leucadia Boulevard	Upgrade from 8F to 10F + HOV	1.16	F0	E
18 SD R42.7 - R47.0	Leucadia Boulevard to Palomar Airport Road	Upgrade from 8F to 10F + HOV	1.12	F0	E
19 SD R47.0 - R51.2	Palomar Airport Road to SR-78	Upgrade from 8F to 10F + HOV	1.08	F0	E
20 SD R51.2 - R53.2	SR-78 toMission Avenue	Add HOV	1.46	F3	E
21 SD R53.2 - R53.9	Mission Avenue to SR-76	Add HOV	1.28	F1	E
22 SD R53.9 - R56.4	SR-76 to U/R limit	Add HOV	1.27	F1	E
23 SD R56.4 - R72.4	U/R limit to Orange County line	Add HOV + BC +FC	1.26	F1	E

ADT = Average Daily Traffic
BC = Border Checkpoint expansion
D/C = Demand to Capacity
FC = Foothill Corridor connection
IC = Interchange
O.S. = Outer Separation
TA = Transit Alternative
WB = Widen Bridge
8F = Eight lane freeway
10F = Ten lane freeway
2 HOV = Two High Occupancy Vehicle lanes

* The Concept LOS for the HOV lanes is LOS 'C' and the 2015 peak hour Operating LOS for the HOV lanes is expected to be LOS 'C' or better.
** Peak Hour Operating Level Of Service includes provision of state highway, transit and arterial improvements.
*** Concept LOS is based on the SANDAG CMP minimum LOS standard.
NOTES:

1) Specific facility improvements for Segments 14 through 23are subject to change pending results of the North Coast Corridor Major Investment Study.
2) Corridor facility improvements from Downtown San Diego to Oceanside include continuing Coast Express Commuter Rail (Coaster) service.
3) Consideration should be given to upgrading Segments 20-23 to a 10 + 2HOV where feasible.

POST-2020 ULTIMATE TRANSPORTATION CORRIDOR

The post-2020 Ultimate Transportation Corridor (UTC) describes the long term (beyond the 20 year planning period) right of way requirements for a particular segment. The long term needs are determined by Advanced Transportation System Development (ATSD) activities which include investigation and analysis of Community Plans, General Plans, Transportation Plans, Land Use Plans, Environmental Documents, and other planning documents. The intent is to take advantage of or develop opportunities for

long term right of way acquisition and to work with local and regional agencies to implement corridor preservation measures.

The UTC for I-5 is the same as the 2020 Transportation Concept facility.

LIST OF SYSTEM PLANNING ACRONYMS

ADT	Average Daily Traffic
AHS	Automated Highway System
APCD	Air Pollution Control District
ATSD	Advanced Transportation System Development
AVI	Automated Vehicle Identification
BN&SF	Burlington Northern and Santa Fe Railroad
CBD	Central Business District
CCAA	California Clean Air Act
CMP	Congestion Management Program
CTC	California Transportation Commission
D/C	Demand Volume to Capacity Ratio
DSMP	District System Management Plan
EPA	Environmental Protection Agency
ETTM	Electronic Toll Collection and Traffic Management
F&E	Freeway and Expressway System
FIS	Federal Inspection Services
FY	Fiscal Year
HOV	High Occupancy Vehicle
ICES	Intermodal Corridors of Economic Significance
IRRS	Interregional Route System
ISTEA	Intermodal Surface Transportation Efficiency Act
ITS	Intelligent Transportation Systems
LOS	Level of Service
LOSSAN RCA	Los Angeles - San Diego Rail Corridor Agency
LROP	Long Range Operations Plan
LRT	Light Rail Transit
MIS	Major Investment Study
MSL	Maintenance Service Level
MTDB	Metropolitan Transit Development Board
NAFTA	North American Free Trade Agreement
NCTD	North County Transit District
NHS	National Highway System
PHV	Peak Hour Volume
PM	Post Mile
PR	Project Report
PSR	Project Study Report
PTOC	Primitive Traffic Operations Center
POE	Port of Entry
RAQS	Regional Air QualityStrategy
RAS	Regional Arterial System
RCR	Route Concept Report
RTP	Regional Transportation Plan
R/W	Right of Way
SANDAG	San Diego Association of Governments
SCRRA	Southern California Regional Rail Authority
SD&IV	San Diego and Imperial Valley Railine
SDNR	San Diego Northern Railway
SDUPD	San Diego Unified Port District
SOV	Single Occupancy Vehicle
STAA	Surface Transportation Assistance Act
STIP	State Transportation Improvement Program
TCM	Transportation Control Measure
TCR	Transportation Concept Report
TDM	Transportation Demand Management

TSDP	Transportation System Development Plan
TMA	Transportation Management Association
TMC	Transportation Management Center
TSM	Transportation Systems Management
UTC	Ultimate Transportation Corridor
VMT	Vehicles Miles Travelled

LEVEL OF SERVICE (LOS) DEFINITIONS

The concept of LOS (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort and convenience, and safety. Levels of Service definitions can generally be categorized as follows:

LOS	D/C	Congestion/Delay	Traffic Description
		(Used for two and four lane freeways and expressways)	
"A"	<.34	None	Free flow.
"B"	0.35-0.52	None	Free to stable flow, light to moderate volumes.
"C"	0.53-0.69	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	0.70-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
		(Used for six lane freeways and expressways)	
"A"	< .39	None	Free flow
"B"	0.40-0.59	None	Free to stable flow, light to moderate volumes
"C"	0.60-0.74	None to Minimal	Stable flow, moderate volumes freedom to maneuver noticeably restricted
"D"	0.75-0.92	Minimal to Substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor

LOS	D/C	Congestion/Delay	Traffic Description
		(Used for freeways with eight or more lanes)	
"A"	< .42	None	Free flow
"B"	0.43-0.62	None	Free to stable flow, light to moderate volumes
"C"	0.63-0.79	None to Minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted
"D"	0.80-0.92	Minimal to Substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor
		(Used for freeways and expressways)	
"F0"	1.01-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
"F1"	1.26-1.35	Severe 1-2 hour delay	Very heavy congestion very long queues.
"F2"	1.36-1.45	Very severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
"F3"	>1.46	Extremely severe 3+ hours of delay	Gridlock

2020 TRANSPORTATION CONCEPT
FACILITY IMPROVEMENTS

Segment/Location	Improvement Description	Peak Hour D/C Ratio	Peak Hour Operating LOS	Concept LOS
1. International Border to I-805	8F + transborder access improvements	0.99	E	E
6. SR-54 to I-15	Upgrade from 8F to 10F	1.30	F1	F0
12. I-8 to SR-274	Add HOV/TA	1.24	F0	E
13. SR-274 to SR-52	Add HOV/TA	1.26	F1	E
14. SR-52 to I-805	Add HOV/TA	1.32	F1	E
15. I-805 to SR-56	Add 6 O.S. + HOV/TA	1.24	F0	F0
16. SR-56 to Manchester Avenue	Upgrade from 8F to 10F +HOV	1.41	F2	F0
17. Manchester Ave. to Leucadia Blvd.	Upgrade from 8F to 10F +HOV	1.16	F0	E
18. Leucadia Blvd. to Palomar Airport Rd.	Upgrade from 8F to 10F +HOV	1.12	F0	E
19. Palomar Airport Rd. to SR-78	Upgrade from 8F to 10F +HOV	1.08	F0	E
20. SR-78 to Mission Avenue	Add HOV	1.46	F3	E
21. Mission Avenue to SR-76	Add HOV	1.28	F1	E
22. SR-76 to U/R Limit	Add HOV	1.27	F1	E
23. U/R limit to Orange County Line	Add HOV + BC + FC	1.26	F1	E

FC = Foothill Corridor Extension O.S. = Outer Separation 8F = Eight Lane Freeway 10F = Ten lane freeway
BC = Border Checkpoint Expansion TA = Transit Alternative HOV = High Occupancy Vehicle lane
D/C = Demand to Capacity U/R = Urban/Rural

I approve this Transportation Concept Report as the guide for development of Interstate 5 over the next 20 years.

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Date

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